

Amendments to the Claims

The current listing of the claims replaces all previous amendment and listings of the claims.

1. (Previously Presented) A method for reinforcing a structure comprising:

disposing a high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete on an outer circumferential surface of a member of the structure so as to restrain expansion of apparent volume accompanying rupture of the member, to thereby control rupture of the member and support a portion of a load of the structure after rupture of the member.

2. (Previously Presented) The method for reinforcing a structure according to Claim 1, wherein the high-ductility material comprises a fiber origin or rubber origin sheet material.

3. (Previously Presented) The method for reinforcing a structure according to Claim 1, wherein the high-ductility material comprises a fiber origin or rubber origin tape-like sheet material is wound spirally on the member while overlapping at overlap portions.

4. (Previously Presented) A method for reinforcing a structure comprising:

disposing a high-ductility material on an outer circumferential surface of a member of the structure to restrain expansion of apparent volume accompanying rupture of the member, to thereby control rupture of the member;

winding the high-ductility material by a single turn at a winding start end of the member;

winding the high-ductility material spirally while a number of overlap turns is sequentially increased until a predetermined maximum number of overlap turns is reached;

winding the high-ductility material spirally while the maximum number of overlap turns is maintained along a predetermined length of the member; and

winding the high-ductility material spirally while the number of overlap turns is sequentially decreased such that the high-ductility material is wound by a single turn at a winding termination end of the member.

5. (Previously Presented) The method for reinforcing a structure according to Claim 1, wherein an adhesive layer is formed on at least one side of the high-ductility material, and the high-ductility material is affixed to the member via the adhesive layer.

6. (Previously Presented) The method for reinforcing a structure according to Claim 3, wherein the high-ductility material is wound on the member such that the overlap portions are bonded together and/or such that the high-ductility material is bonded to a surface of the member at at least a single zonal region extending along a length direction of the member.

7. (Previously Presented) The method for reinforcing a structure according to Claim 1, wherein the high-ductility material comprises a fiber origin or rubber origin sheet material and is rolled tightly on the member by a plurality of turns to thereby be rolled in layers such that at least a rolling start end portion of the high-ductility material is bonded to a corresponding portion of an outer surface of the member while a rolling termination end portion of the high-ductility material is bonded to a corresponding portion of an underlying layer of the high-ductility material.

8. (Previously Presented) The method for reinforcing a structure according to Claim 7, wherein the high-ductility material is rolled on the member such that intermediate layers of the high-ductility material are bonded together at at least a single zonal region extending along a length direction of the member.

9. (Previously Presented) The method for reinforcing a structure according to Claim 1, wherein the high-ductility material comprises a fiber origin or rubber origin tape-like sheet material and is wound spirally while overlapping an overlap portion and is combined with being rolled tightly on the member by a plurality of turns to thereby be rolled in layers such

that at least a rolling start end portion of the high-ductility material is bonded to a corresponding portion of an outer surface of the member while a rolling termination end portion of the high-ductility material is bonded to a corresponding portion of an underlying layer of the high-ductility material.

10. (Previously Presented) The method for reinforcing a structure according to Claim 9, wherein the high-ductility material comprises a fiber origin or rubber origin tape-like sheet material and is spirally wound on the member along an overall length of the member while overlapping at overlap portions before or after the high-ductility material is rolled on the member at upper and lower end portions of the member by being rolled tightly on the member by a plurality of turns to thereby be rolled in layers such that at least a rolling start end portion of the high-ductility material is bonded to a corresponding portion of an outer surface of the member while a rolling termination end portion of the high-ductility material is bonded to a corresponding portion of an underlying layer of the high-ductility material.

11. (Previously Presented) The method for reinforcing a structure according to Claim 1, wherein the high-ductility material is formed through application of a rubber or resin viscous-material to the member.

12. (Previously Presented) The method for reinforcing a structure according to Claim 1, wherein the high-ductility material is disposed such that a cavity or a weak layer is interposed between the high-ductility material and the member.

13. (Previously Presented) A configuration for reinforcing a structure comprising:
a high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete configured to be disposed on an outer circumferential surface of a member of the structure so as to elastically restrain expansion of apparent volume accompanying rupture of the member, to thereby control rupture of the member and support a portion of a load of the structure after rupture of the member.

14. (Previously Presented) The configuration for reinforcing a structure according to Claim 13, wherein the high-ductility material comprises a fiber origin or rubber origin sheet material.

15. (Previously Presented) The configuration for reinforcing a structure according to Claim 13, wherein the high-ductility material comprises a fiber origin or rubber origin tape-like sheet material configured to be wound spirally on an outer surface of the member in a fixed and overlapping condition.

16. (Previously Presented) A configuration for reinforcing a structure comprising:
a high-ductility material configured to be disposed on an outer circumferential surface of a member of the structure to elastically restrain expansion of apparent volume accompanying rupture of the member, to thereby control rupture of the member,

wherein the high-ductility material comprises a fiber origin or rubber origin tape-like sheet material and is configured to be wound spirally on an outer surface of the member in a fixed and overlapping condition, and

wherein the high-ductility material is configured to be wound by a single turn at a winding start end of the member, spirally while a number of overlap turns is sequentially increased until a predetermined maximum number of overlap turns is reached, spirally while the maximum number of overlap turns is maintained along a predetermined length of the member and spirally while the number of overlap turns is sequentially decreased such that the high-ductility material is wound by a single turn at a winding termination end of the member.

17. (Previously Presented) The configuration for reinforcing a structure according to Claim 12, wherein an adhesive layer is formed on at least one side of the high-ductility material, and the high-ductility material is configured to be affixed to the member via the adhesive layer.

18. (Previously Presented) The configuration for reinforcing a structure according to Claim 15, wherein the high-ductility material is configured to be wound on the member such that the overlap portions are bonded together and/or such that the high-ductility material is bonded to a surface of the member at at least a single zonal region extending along a length direction of the member.

19. (Previously Presented) The configuration for reinforcing a structure according to Claim 13, wherein the high-ductility material comprises a fiber origin or rubber origin sheet material and is configured to be rolled tightly on the member in a plurality of layers such that at least a rolling start end portion of the high-ductility material is bonded to a corresponding portion of an outer surface of the member while a rolling termination end portion of the high-ductility material is bonded to a corresponding portion of an underlying layer of the high-ductility material.

20. (Previously Presented) The configuration for reinforcing a structure according to Claim 13, wherein the high-ductility material comprises a fiber origin or rubber origin tape-like sheet material and is configured to be disposed such that it is wound spirally on an outer surface of the member in a fixed and overlapping condition and is combined with being rolled tightly on the member in a plurality of layers such that at least a rolling start end portion of the high-ductility material is bonded to a corresponding portion of an outer surface of the member while a rolling termination end portion of the high-ductility material is bonded to a corresponding portion of an underlying layer of the high-ductility material.

21. (Previously Presented) The configuration for reinforcing a structure according to Claim 20, wherein the high-ductility material is configured to be spirally wound on the member along an overall length of the member such that it is wound spirally on an outer surface of the member in a fixed and overlapping condition before or after the high-ductility material is rolled on the member at upper and lower end portions of the member by being

rolled tightly on the member in a plurality of layers such that at least a rolling start end portion of the high-ductility material is bonded to a corresponding portion of an outer surface of the member while a rolling termination end portion of the high-ductility material is bonded to a corresponding portion of an underlying layer of the high-ductility material.

22. (Previously Presented) The configuration for reinforcing a structure according to Claim 13, wherein the high-ductility material comprises a covering material configured to be formed in a layered condition through application of a rubber or resin viscous-material to the member.

23. (Previously Presented) The configuration for reinforcing a structure according to Claim 13, wherein the high-ductility material is configured to be disposed such that a cavity or a weak layer is interposed between the high-ductility material and the member.

24. (Currently Amended) A cored roll of high-ductility material comprising:

a core having a predetermined length and an outside diameter; and

the high-ductility material having a predetermined length and rolled on the core, the high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete and configured to be disposed on an outer circumferential surface of a member of a structure to elastically restrain expansion of apparent volume accompanying rupture of a member of the structure, to thereby control rupture of the member and support a portion of a load of the structure after rupture of the member; and

a plurality of parting lines drawn on one side of the high-ductility material along a length direction of the high-ductility material, the parting lines configured to enable equal division of a width of the high-ductility material at any one of two or more different pitches.

25. (Previously Presented) The cored roll of high-ductility material according to Claim 24, wherein the parting lines are configured to be visually or tactilely discriminated from one another.

26. (Previously Presented) A method for reinforcing a structure comprising:

fixedly attaching a high-ductility covering material having an initial elastic modulus lower than an elastic modulus of concrete to an outer circumferential surface of a member of the structure, to thereby support a load of the member after deformation of the member.

27. (Previously Presented) A method for reinforcing a structure comprising:

fixedly attaching a high-ductility covering material formed of a raw material having an elastic modulus lower than that of a tie hoop to an outer circumferential surface of an existing column supporting the structure, to thereby cause the high-ductility covering material to bear a load imposed on the column after the column is deformed,

wherein the high-ductility covering material comprises a plurality of surrounding cores disposed around the column to be arranged at predetermined intervals along a vertical direction, and a fiber origin or rubber origin sheet material connecting the adjacent surrounding cores along the vertical direction, to thereby assume a form of an integral bellows-like reinforcement.

28. (Previously Presented) A method for reinforcing a structure comprising:

disposing a high-ductility covering material having an initial elastic modulus lower than an elastic modulus of concrete inside a facing surrounding wall material around a member of the structure with a cavity interposed between the facing surrounding wall material and the member, to thereby support a load of the member after deformation of the member.

29. (Currently Amended) A method for reinforcing a structure comprising:

disposing a high-ductility covering material formed of a raw material having an elastic modulus lower than that of a tie hoop inside a facing surrounding wall material disposed around an existing column supporting the structure with a cavity interposed between

the facing surrounding wall material and the column, to thereby cause the high-ductility covering material to bear a load imposed on the column after the column is deformed,

wherein the high-ductility covering material comprises a plurality of surrounding cores disposed around the column with the cavity interposed ~~thereamong~~ between the plurality of surrounding cores and the column to be arranged at predetermined intervals along a vertical direction, and a fiber origin or rubber origin sheet material connecting the adjacent surrounding cores along the vertical direction, to thereby assume a form of an integral bellows-like reinforcement.

30. (Previously Presented) A configuration for reinforcing a structure comprising:
a high-ductility covering material having an initial elastic modulus lower than an elastic modulus of concrete configured to be fixedly attached to an outer circumferential surface of a member of the structure to restrain expansion of apparent volume after rupture of the member, to thereby control rupture of the member and support a portion of a load of the structure after rupture of the member.

31. (Previously Presented) A configuration for reinforcing a structure comprising:
high-ductility covering material formed of a raw material having an elastic modulus lower than that of a tie hoop configured to be fixedly attached to an outer circumferential surface of a member supporting the structure,

wherein the high-ductility covering material comprises a plurality of surrounding cores configured to be disposed around the column to be arranged at predetermined intervals along a vertical direction, and a fiber origin or rubber origin sheet material connecting the adjacent surrounding cores along the vertical direction, to thereby assume a form of an integral bellows-like reinforcement.

32. (Previously Presented) A configuration for reinforcing a structure comprising:

a high-ductility covering material having an initial elastic modulus lower than an elastic modulus of concrete configured to be disposed inside a facing surrounding frame disposed around a member of the structure with a cavity interposed between the facing surrounding frame and the member, to thereby support a load of the member after deformation of the member.

33. (Currently Amended) A configuration for reinforcing a structure comprising:

a high-ductility covering material formed of a raw material having an elastic modulus lower than that of a tie hoop configured to be disposed inside a facing surrounding frame disposed around a member supporting the structure with a cavity interposed between the facing surrounding frame and the column,

wherein the high-ductility covering material comprises a plurality of surrounding cores configured to be disposed around the column with the cavity interposed ~~thereamong~~ between the plurality of surrounding cores and the column to be arranged at predetermined intervals along a vertical direction, and a fiber origin or rubber origin sheet material connecting the adjacent surrounding cores along the vertical direction, to thereby assume a form of an integral bellows-like reinforcement.

34. (Previously Presented) A high-ductility material comprising:

a high-ductility covering material having an initial elastic modulus lower than an elastic modulus of concrete configured to be disposed on an outer circumferential surface of a member of a structure to thereby support a load of the member after deformation of the member; and

an adhesive layer formed on at least one side of the high-ductility covering material, the high-ductility material configured to be affixed to the member via the adhesive layer.

35. (Previously Presented) A high-ductility material comprising:

a high-ductility covering material having an initial elastic modulus lower than an elastic modulus of concrete configured to be disposed on an outer circumferential surface of a member of a structure to thereby support a load of the member after deformation of the member,

wherein the high-ductility material is configured to be wound on the member such that overlap portions are bonded together and/or such that the high-ductility material is bonded to a surface of the member at at least a single zonal region extending along a length direction of the member.

36. (Previously Presented) A high-ductility covering material comprising:
a plurality of surrounding cores configured to be disposed around a member to be arranged at predetermined intervals along a vertical direction; and
a fiber origin or rubber origin sheet material connecting the adjacent surrounding cores along the vertical direction, to thereby assume a form of an integral bellows-like reinforcement.

37. (Currently Presented) A high-ductility covering material comprising:
a plurality of surrounding cores configured to be disposed around a member with a cavity interposed ~~thereamong~~ between the plurality of surrounding cores and the member to be arranged at predetermined intervals along a vertical direction;
and a fiber origin or rubber origin sheet material connecting the adjacent surrounding cores along the vertical direction, to thereby assume a form of an integral bellows-like reinforcement.

38. (Previously Presented) A method for reinforcing a structure comprising:
disposing a high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete on an outer circumferential surface of a member of the structure with a weak layer or a cavity interposed between the material and the member to restrain

expansion of apparent volume accompanying rupture of the member, to thereby control rupture of the member and support a portion of the load of the structure after rupture of the member.

39. (Previously Presented) A method for reinforcing a structure comprising:

disposing a high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete on a portion of an outer circumferential surface of a member of the structure to restrain expansion of apparent volume accompanying rupture of the member, to thereby control rupture of the member and support a portion of the load of the structure after rupture of the member.

40. (Previously Presented) A method for reinforcing a structure comprising:

fixedly attaching a high-ductility material having an initial elastic modulus lower than an elastic modulus of concrete to an outer circumferential surface of a member of the structure to restrain expansion of apparent volume accompanying rupture of the member, to thereby control rupture of the member and support a portion of the load of the structure after rupture of the member; and

determining an amount of the material to attach based on a load of the member and an amount of a deformation in a peripheral direction allowed by the member.